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## Multimedia content classification using motion and audio information

[Yao Wang](#) [Jincheng Huang](#) [Zhu Liu](#) [Tsuhan Chen](#)  
Polytech. Univ., Brooklyn, NY, USA ;This paper appears in: [Circuits and Systems, 1997. ISCAS '97., Proceedings of 1997 IEEE International Symposium on](#)

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09/518,937

## Abstract

Content-based video segmentation and classification is a key to the success of future multimedia databases. Research in this area in the past several years has focused on the use of speech recognition and image analysis techniques. As a complimentary effort to prior research, we have focused on the use of motion and audio characteristics. Fundamental to both segmentation and classification tasks is the characterization by certain features of a given video segment. In this paper, we describe several audio and motion features that have been found to be effective in distinguishing motion and audio characteristics of different types of scene

## Index Terms

## Inspec

## Controlled Indexing

[acoustic signal processing](#) [audio signals](#) [image classification](#) [image segmentation](#) [motion estimation](#) [multimedia computing](#) [speech processing](#) [video signal processing](#)

## Non-controlled Indexing

[audio characteristics](#) [content-based video classification](#) [content-based video segmentation](#) [motion characteristics](#) [multimedia content classification](#) [multimedia databases](#)

## Author Keywords

Not Available

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On page(s): 837-852, Volume: 86, Issue: 5, May 1998  
[Abstract](#) | Full Text: [PDF](#) (304)
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*Signal Processing Magazine, IEEE*  
On page(s): 12-36, Volume: 17, Issue: 6, Nov 2000  
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## Hierarchical classification of audio data for archiving and retrieving

[Tong Zhang](#) [Kuo, C.-C.J.](#)

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This paper appears in: [Acoustics, Speech, and Signal Processing, 1999. ICASSP '99. Proceedings., 1999 IEEE International Conference on](#)

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Volume: 6

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## Abstract

A hierarchical system for audio classification and retrieval based on audio content analysis is presented in this paper. The system consists of three stages. The first stage is called the coarse-level audio classification and segmentation, where audio recordings are classified and segmented into speech, music, several types of environmental sounds, and silence, based on morphological and statistical analysis of temporal curves of short-time features of audio signals. In the second stage, environmental sounds are further classified into fine classes such as applause, rain, bird sound, etc. This fine-level classification is based on time-frequency analysis of audio signals and use of the hidden Markov model (HMM) for classification. In the third stage, the query-by-example audio retrieval is implemented where similar sounds can be found according to an input sample audio. It is shown that the proposed system has achieved an accuracy higher than 90% for coarse-level audio classification. Examples of audio fine classification and audio retrieval are also provided.

## Index Terms

Inspec

## Controlled Indexing

[audio signal processing](#) [content-based retrieval](#) [database management systems](#) [feature extraction](#) [hidden Markov models](#) [information retrieval](#) [mathematical morphology](#) [signal classification](#) [statistical analysis](#) [time-frequency analysis](#)

## Non-controlled Indexing

[archiving](#) [audio classification](#) [audio content analysis](#) [audio data](#) [audio recordings](#) [audio signal](#) [coarse-level audio classification](#) [environmental sounds](#) [hidden Markov model](#) [hierarchical classification](#) [morphological analysis](#) [music](#) [query-by-example audio retrieval](#) [retrieval](#) [segmentation](#) [silence](#) [speech](#) [statistical analysis](#) [temporal curve](#) [time-frequency analysis](#)

## Author Keywords

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[Abstract](#) | [Full Text: PDF \(1848\)](#)

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## Scene determination based on video and audio features

[Lienbart, R.](#) [Pfeiffer, S.](#) [Effelsberg, W.](#)  
Intel Res. Lab., Santa Clara, CA, USA ;

This paper appears in: [Multimedia Computing and Systems, 1999. IEEE International Conference on](#)

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### Abstract

Determining automatically what constitutes a scene in a video is a challenging task, particularly since there is no precise definition of the term "scene". It is left to the individual to set attributes shared by consecutive shots which group them into scenes. Certain basic attributes such as dialogs, like settings and continuing sounds are consistent indicators. We have therefore developed a scheme for identifying scenes by clustering shots according to detected dialogs, like settings and similar audio. Results from experiments show automatic identification of these types of scenes to be reliable

### Index Terms

#### Inspec

#### Controlled Indexing

[content-based retrieval](#) [multimedia databases](#) [video databases](#)

#### Non-controlled Indexing

[audio features](#) [automatic scene identification](#) [consecutive shots](#) [content based analysis](#)  
[continuing sounds](#) [dialogs](#) [experiments](#) [multimedia](#) [scene determination](#) [shot](#)  
[clustering](#) [video features](#)

### Author Keywords

Not Available

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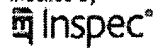
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## Content-based classification, search, and retrieval of audio

[Wold, E.](#) [Blum, T.](#) [Keislar, D.](#) [Wheaton, J.](#)

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This paper appears in: [Multimedia, IEEE](#)

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#### Abstract

Many audio and multimedia applications would benefit from the ability to classify and search for audio based on its characteristics. The audio analysis, search, and classification engine described here reduces sounds to perceptual and acoustical features. This lets users search or retrieve sounds by any one feature or a combination of them, by specifying previously learned classes based on these features, or by selecting or entering reference sounds and asking the engine to retrieve similar or dissimilar sounds

#### Index Terms

##### Inspection

##### Controlled Indexing

[classification](#) [information retrieval](#) [multimedia computing](#) [multimedia systems](#)

##### Non-controlled Indexing

[audio](#) [classification](#) [content-based](#) [multimedia](#) [retrieval](#) [search](#)

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## Integrated image and speech analysis for content-based video indexing

Yuh-Lin Chang Wenjun Zeng Kamel, I. Alonso, R.  
Matsushita Inf. Technol. Lab., Panasonic Technol. Inc., Princeton, NJ, USA;

This paper appears in: [Multimedia Computing and Systems, 1996., Proceedings of the Third IEEE International Conference on](#)

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### Abstract

We study an important problem in multimedia database, namely the automatic extraction of indexing information from raw data based on video contents. The goal of our research project is to develop a prototype system for automatic indexing of sports videos. The novelty of our work is that we propose to integrate speech understanding and image analysis algorithms for extracting information. The main thrust of this work comes from the observation that in news or sports video indexing, usually speech analysis is more efficient in detecting events than image analysis. Therefore, in our system, the audio processing modules are first applied to locate candidates in the whole data. This information is passed to the video processing modules, which further analyze the video. The final products of video analysis are in the form of pointers to the locations of interesting events in a video. Our algorithms have been tested extensively with real TV programs, and results are presented and discussed.

### Index Terms

#### Inspec

##### Controlled Indexing

[audio-visual systems](#) [information retrieval](#) [interactive video](#) [multimedia computing](#) [sport](#)

##### Non-controlled Indexing

[audio processing modules](#) [automatic extraction](#) [automatic indexing](#) [content based video indexing](#) [image analysis](#) [image analysis algorithms](#) [indexing information](#) [interesting events](#) [multimedia database](#) [raw data](#) [real TV programs](#) [speech analysis](#) [speech understanding](#) [sports videos](#) [video contents](#) [video processing modules](#)

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